

dimensioned such that at least two rotor gates are of the same size, and all three walls between the rotor gates can close a fluid chamber simultaneously.

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45. (New) A hydraulic transformer according to claim 41 wherein the shuttle valve is coupled to the face plate.

REMARKS

This submission is in response to the Official Action dated NOVEMBER 29, 2001. Claims 21 and 23-42 have been amended. Claims 43-45 have been added. Claims 21-45 are pending. Reconsideration of the above identified application, in view of the above amendments and the following remarks, is respectfully requested.

Claims 21-42 stand rejected under 35 U.S.C. § 112, second paragraph, for failing to particularly point out and distinctly claim the subject matter. More specifically, the Examiner has indicated that the claims are generally narrative and fail to conform with current U.S. Patent practice. Accordingly, the claims have been amended above to be in conformance with U.S. Patent practice and to meet the requirements of 35 U.S.C. Section 112, second paragraph.

Claims 21, 22, 25, 26 and 32 stand rejected under 35 U.S.C. § 102(b) as being anticipated by or, in the alternative, under 35 U.S.C. § 103 as being unpatentable over U.S. Patent No. 5,251,442 to Roche. The Examiner maintains that

Roche discloses a transformer that includes fluid displacers 36, 38 that are rotatably coupled together.

Claims 23, 24 and 31 stand rejected under 35 U.S.C. § 103 as being unpatentable over Roche.

Claims 34-37 and 24 stand rejected under 35 U.S.C. § 103 as being unpatentable over Roche in view of U.S. Patent No. 3,188,963 to Tyler. The Examiner concludes that it would have been obvious to one of ordinary skill in the art to make Roche's displacers to include a face plate which during rotation of the rotor serves to seal and alternately connect the fluid chambers to the three line connections based on the teachings of Tyler.

Applicants appreciatively acknowledge the indication that claims 28-30, 33 and 38-42 contain allowable subject matter.

U.S. Patent No. 5,251,442 to Roche relates to a regenerator for a fluid power system in which displacers are incorporated into a fluid flow network and an array of selectable flow paths is included through the displacers. A control system responsive to changes in demand for the flow of fluid selects among the available flow paths to operate the displacers in various combinations of motors, pumps and recirculators.

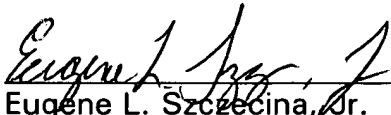
The present application, as exemplified by amended claim 21, differs from Roche in that it pertains to an apparatus comprising, in combination, a pressure source for storing and delivering fluid of high pressure. At least one hydraulic transformer is

connected to a high pressure line and a low pressure line. A hydromotor is connected to the hydraulic transformer through connecting lines depending on the measured flow in the connecting lines between the hydromotor and the hydraulic transformer. The hydraulic transformer also has a continuously variable setting controlled by adjustment means. This hydraulic transformer is directly connected to the hydromotor whereby only the hydraulic transformer is connected to the pressure source and, therefore, controls the load and/or movement of the hydraulic motor. This specific interrelation and co-operation of the hydraulic transformer, hydromotor and the control of the fluid pressure in the connecting lines between the transformer and the motor depending on the magnitude of flow in the connecting lines is neither taught nor suggested by Roche.

Therefore, in view of the above amendments and remarks, it is respectfully requested that the application be reconsidered and that all pending claims be allowed and the case passed to issue.

If there are any other issues remaining which the Examiner believes could be resolved through either a Supplemental Response or an Examiner's Amendment, the Examiner is respectfully requested to contact the undersigned at the telephone number indicated below.

Respectfully submitted,


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Please amend the claims as follows:

21. (Amended) An apparatus for executing activities assisted by equipment driven by at least one of a [means of] rotating [or] and a linear hydromotor [which] whereby at least one of the hydromotors is at least one of loadable and movable [may be loaded and/or moved] in two directions[,] and is directly connected to a hydraulic transformer, the apparatus comprising

a pressure source [(P)] for storing and delivering fluid of high pressure,

a high-pressure line and a low-pressure line [(T)] for transporting fluid to and from [at least one] the hydraulic transformer, the hydraulic transformer being provided with a rotor and a continuously variable setting controlled by adjustment [adjusting] means, a plurality of connecting lines connecting the [a hydromotor connected to the] hydraulic transformer, the hydrometer and the control means [with connecting lines and control means] for controlling the adjustment means and thereby controlling the fluid pressure in the connecting lines, wherein the control means comprise a sensor for measuring [directly or indirectly] the flow in the connecting lines between the hydromotor and the hydraulic transformer.

23. (Amended) An apparatus according to claim 21, wherein the sensor is a revolution sensor for measuring the [rotor's] rate of rotation of the rotor.

24. (Amended) An apparatus according to claim 21, wherein the sensor is a movement sensor for measuring the [hydromotor's] rate of movement of the hydromotor.

25. (Amended) An apparatus according to claim 21, wherein the sensor forms part of a flow restriction valve in the high-pressure line to at least one of the hydraulic transformer and the connecting line.

26. (Amended) An apparatus according to claim 21, wherein the sensor is coupled with the [adjusting] adjustment means for, subject to the flow rate measured, adjusting the fluid pressure in the connecting line.

27. (Amended) An apparatus according to claim 21, wherein the pressure source comprises an aggregate[, characterized in that] and the control means are adjusted such that the hydromotor uses less power than an adjustable value which is[, for example,] a portion of the power the aggregate is capable of supplying.

28. (Amended) An apparatus according to claim 21, wherein the hydraulic transformer is provided with means [to cause] for causing the pressure in the connecting [line(s)] lines to oscillate around an [adjusted] adjustable value at a frequency of at least 3 [and preferably more than 7] Hertz.

29. (Amended) An apparatus according to claim 21, wherein [the hydraulic transformer has a continuously variable setting controlled by] the adjustment means[, characterized in that the adjustment means are designed to be able to change] changes the setting within 500 msec from [the] a first extreme setting via the zero position to [the] a second extreme setting[.,].

30. (Amended) An apparatus according to claim 21, wherein the adjustment means are provided with spring-activated elements for returning the hydraulic transformer into a neutral position wherein the pressure in the connecting [lines(s)] lines is minimal.

31. (Amended) An apparatus according to claim 21, wherein the hydromotor is a linear cylinder connected with the hydraulic transformer by [means of] one connecting line[, the connecting line being] that is coupled to the [provided with means for at under pressure supplying fluid from the] low-pressure line via a non-return valve.

32. (Amended) An apparatus according to claim 21, wherein a hydraulic transformer, [and] the connecting [line(s)] lines and the hydromotor connected thereto are suitable for a pressure exceeding the pressure prevailing in the high-pressure line.

33. (Amended) A hydraulic transformer for use in an apparatus according to claim 21, wherein a first fluid flow having a first pressure is transformed into a second fluid flow having a second pressure, comprising a housing, a first line connection, a second line connection and a third line connection, a rotor which in relation to the housing is limitlessly rotatable, a plurality of fluid chambers whose volume, when the rotor rotates at a first angle, varies between a minimum and a maximum volume, and a face plate provided with face plate conduits [(b)] for, while the rotor is rotating, alternately connecting the fluid chambers with the three line connections, which face plate is rotatable around a rotation axis in relation to the housing and is provided with means for without interruption keeping a face plate conduit [(b)] in communication with the respective line connection while the face plate is rotating, wherein the face plate, in relation to the housing, is able to rotate at a second angle which is similar to the first angle.

34. (Amended) A hydraulic transformer for use in an apparatus according to claim 21, wherein a first fluid flow having a first pressure is transformed into a second fluid flow having a second pressure, the hydraulic transformer comprising a housing, a first line connection, a second line connection and a third line connection, a rotor which in relation to the housing is limitlessly rotatable[,] having a plurality of fluid chambers whose volume during rotation of the rotor varies between a minimum volume and a maximum volume, [and] a plurality of face plate gates for

closing the fluid chambers and rotor conduits for connecting the face plate gates with the fluid chambers, and a face plate provided with three rotor gates cooperating with the face plate gates which during rotation of the rotor serve for [sealing] closing and alternately connecting [via rotor conduits (a), face plate gates and the rotor gates,] the fluid chambers with the three line connections, wherein the maximum volume of the fluid chambers to be [sealed] closed by means of the face plate is maximally [four] five times as large as the minimum volume.

35. (Amended) A hydraulic transformer according to claim 34, wherein the maximum volume of the fluid chambers to be [sealed] closed by means of the face plate is maximally three times [as large as] the minimum volume.

36. (Amended) A hydraulic transformer according to claim 34, wherein the rotor has between nine [or] and twelve fluid chambers.

37. (Amended) A hydraulic transformer according to claim 34, wherein the [face plate gates and] the rotor gates are separated by walls and the face plate gates and the rotor gates are dimensioned such that at least two rotor gates are of the same size, and all three walls between the rotor gates can close a fluid chamber simultaneously [seal off a face plate gate].

38. (Amended) A hydraulic transformer according to claim [34] 33, wherein the face plate at the side of the fluid chambers is bordered by a first separating surface [(V1)] and at the side facing away from the fluid chambers by a second separating surface [(V2)], the first separating surface comprising at least three rotor gates located at a first radius and being in communication with three face plate conduits [(b)], and the second separating surface [(V2)] comprising two housing gates located at a second radius, and each being in communication with a face plate conduit [(b)], wherein the third face plate conduit is in communication with a housing gate located at a third radius which is different from the second radius.

39. (Amended) A hydraulic transformer according to claim [34] 33, wherein the third face plate at the side of the fluid chambers is bordered by a first separating surface and at the side facing away from the fluid chambers by a second separating surface and between the first separating surface and the second separating circumference, by an external circumference, the first separating surface comprising at least three rotor gates located at a first radius and being in communication with three face plate conduits, and the second separating surface comprising two housing gates located at a second radius, each being in communication with a face plate conduit and the third face plate conduit is in communication with a housing gate at the external circumference of the face plate.

40. (Amended) A hydraulic transformer according to claim [34] 33, wherein the [third] face plate at the side of the fluid chambers is bordered by a first separating surface and at the side facing away from the fluid chambers by a second separating surface, the first separating surface comprising at least three rotor gates located at a first radius and being in communication with three face plate conduits, and the second separating surface comprising two housing gates located at a second radius, and each being in communication with a face plate conduit, the third face plate conduit is in communication with a housing gate near the rotation axis of the face plate.

41. (Amended) A hydraulic transformer according to claim [34] 33, wherein the face plate at the side of the fluid chambers is bordered by a first separating surface and at the side facing away from the fluid chambers by a second separating surface, the first separating surface comprising at least three rotor gates located at first radius and being in communication with three face plate conduits, and the second separating surface comprising two housing gates located at a second radius, and each being in communication with a face plate conduit, at the second separating surface, the housing is provided with four face plate gates located at the second radius; two face plate gates being positioned diametrically opposite one another and being in direct communication with the first and the second line connection respectively, while the other two face plate gates positioned diametrically

opposite one another are in communication via a shuttle valve with the first and a second line connection [at the second separating surface (V2), the housing is provided among other things with four face plate gates located at the second radius; two face plate gates being positioned diametrically opposite one another and being in direct communication with the first (B) and the second (T) line connection respectively, while the other two face plate gates positioned diametrically opposite one another are in communication via a shuttle valve with the first (B) and a second line connection (T)].

42. A hydraulic transformer according to claim 41 wherein the shuttle valve forms part of the face plate [or is coupled thereto].

Please add the following new claims:

43. (New) A hydraulic transformer according to claim 33, wherein the rotor has between nine and twelve fluid chambers.

44. (New) A hydraulic transformer according to claim 33, wherein the rotor gates are separated by walls and the face plate gates and the rotor gates are dimensioned such that at least two rotor gates are of the same size, and all three walls between the rotor gates can close a fluid chamber simultaneously.

45. (New) A hydraulic transformer according to claim 41 wherein the

shuttle valve is coupled to the face plate.